CLAIMS:

77. A rotating electric machine comprising:

a stator having,

a slot, and

a winding drawn though said slot, said winding having an insulation system with

a first semiconducting layer,

a solid insulation,

a second semiconducting layer, said solid insulation positioned between said first semiconducting layer and said second semiconducting layer, and

a support member positioned in contact with said winding, wherein said first semiconducting layer and said second semiconducting layer being configured to provide respective equipotential surfaces.

78. The machine of Claim 77, wherein:

at least one of said first semiconducting layer and said semiconducting layer having a same coefficient of thermal expansion as the solid insulation.

79. The machine of Claim 77, wherein:

said winding including a cable configured to handle a high-voltage;

said slot having a cable lead-through portion of said cable disposed therein;

said support member being arranged in said slot in resilient fixation with the cable lead-through and configured to exert a pressure against said cable lead-through;

said support member being disposed between said cable lead-through and a side wall of the slot;

a spring material being positioned between the cable lead-through and the side wall of said slot; and

said support member and said spring material formed as an elongated pressure element running in a same direction as the cable lead-through.

80. The machine of Claim 79, further comprising:

a cable output configured to be directly connected to a power network without an intermediate transformer therebetween.

81. The machine of Claim 79, wherein:

said elongated pressure element being a tube having a sleeve containing a pressure-hardened material.

82. The machine of Claim 79, wherein:

said pressure-hardened material being an epoxy.

83. The machine of Claim 79, wherein:

said elongated pressure element including a tube having a sleeve containing a pressurized fluid.

84. The machine of Claim 79, further comprising:

additional elongated pressure elements, wherein

at least a majority of said elongated pressure element and said additional elongated pressure elements configured to exert pressure on said cable lead-through and an adjacent cable lead-through.

85. The machine of Claim 79, wherein:

an axial section of said slot having a profile with a varying cross-section in which, said side wall and an opposing side wall immediately opposite the cable lead-through each have,

a circular portion that corresponds to an outer diameter of the cable, and

a waist portion, being more narrow than said circular portion,

said elongated pressure element being disposed in said waist part.

86. The machine of Claim 85, wherein:

said axial section includes another waist part being a single-sided waist part defined on said side wall by a tangential plane to said circular portion and the opposing side wall and a connecting plane situated between and substantially parallel to a corresponding tangential plane and a plane connecting respective centers of the circular portion for the side wall and the opposing side wall,

said elongated pressure element being arranged at the side wall constituting the tangential plane.

87. The machine of Claim 79, wherein:

said elongated pressure element, and another elongated pressure element, being arranged on a same side wall of the slot.

88. The machine of Claim 79, wherein:

said elongated pressure member and said spring material being arranged close to a same wall of said slot, said spring material being joined to the elongated pressure element.

89. The machine of Claim 79, wherein:

said elongated pressure element and said spring material being respectively positioned close to different walls of the slot.

90. The machine of Claim 89, wherein said spring member being of a sheet of elastic material.

91. The machine of Claim 90, wherein:

the sheet of elastic material includes slots formed therein.

92. The machine of Claim 88, wherein:

said spring material including a pad of elastic material applied on the support member.

93. The machine of Claim 92, wherein:

said pad has a slot formed therein.

94. The machine of Claim 77, wherein:

said winding further includes a cable configured to carry a high-voltage, and

a corrugated sheet surrounding at least a portion of the cable lead-through in said slot.

95. The machine of Claim 94, wherein:

the corrugated sheet surrounds the cable continuously around an entire circumference of the cable and along an entire axial length of the cable in the slot.

96. The machine of Claim 94, wherein:

a largest diameter of the corrugated sheet being substantially equal to a width of the slot; and

a depth of a corrugation in said corrugated sheet being sufficient to absorb a thermal expansion of the cable during operation of the machine.

97. The machine of Claim 94, wherein:

the corrugated sheet being formed from an elastically deformable material.

98. The machine of Claim 94, further comprising:

a casting compound disposed between the corrugated sheet and the slot.

99. The machine of Claim 94, wherein:

the corrugated sheet being formed from a separate tubular corrugated sheet applied

around the second semiconducting layer, said second semiconducting layer being an outer semiconducting layer of the cable.

100. The machine of Claim 99, wherein:

corrugations formed on the corrugated sheet being annular corrugations.

101. The machine of Claim 94, wherein:

a surface of said corrugated sheet having corrugations formed in the second semiconducting layer of the winding, said second semiconducting layer being an outer semiconducting layer.

102. The machine of Claim 101, wherein:

the corrugations in the second semiconducting layer being oriented in a longitudinal direction of the winding.

103. The machine of Claim 77, wherein:

the winding includes a cable configured to carry a high-voltage; and

said support member includes an elongated elastic support element arranged along and in contact with a cable lead-through of said cable disposed in said slot.

104. The machine of Claim 103, wherein:

the support member being shaped to extend along an entire axial extension of the stator.

105. The machine of Claim 103, wherein:

the support member being a hose.

106. The machine of Claim 105, wherein:

the hose encloses a pressure medium.

107. The machine of Claim 106, wherein:

the pressure medium being a fluid.

108. The machine of Claim 107, wherein:

the hose being sealed at both ends thereof.

109. The machine of Claim 107, wherein:

the fluid of the pressure medium being configured to communicate with a pressure source.

110. The machine of Claim 106, wherein:

the pressure medium being an elastic material in a solid form.

111. The machine of Claim 110, wherein:

the elastic material having a cavity running axially therethrough.

112. The machine of Claim 111, wherein:

the cavity having a non-circular cross-section.

113. The machine of Claim 103, wherein:

said slot in a radial plane having a profile with respective wide parts and narrow parts alternating in a radial direction.

114. The machine of Claim 113, wherein:

the narrow parts being asymmetrically positioned in relation to a central plane running radially through the slot.

115. The machine of Claim 114, wherein:

respective of the narrow parts being mirror-inverted in relation to a nearest adjacent narrow part of the respective narrow parts when viewed in a direction of the radial plane.

116. The machine of Claim 103, wherein:

said support element abuts the cable lead-through and an adjacent cable lead-through of the winding.

117. A rotating electric machine comprising:

a high-voltage magnetic circuit having,

a magnetic core, and

a winding of a cable, said cable having,

a conductor configured to carry electrical current and having respective strands,

an inner semiconducting layer disposed around said conductor,

a solid insulation disposed around said inner semiconducting layer, and

an outer semiconducting layer disposed around said solid insulation; and

a support member positioned along and in contact with said winding.

118. The machine according to Claim 117, wherein:

said magnetic core includes a slot in which said cable of said winding is disposed;

said inner semiconducting layer and said outer semiconducting layer being configured to provide respective equipotential surfaces.

119. A method for manufacturing a rotating electric machine, comprising the steps of:

forming a winding for a stator by positioning a cable in a slot of the stator, said cable being configured to hold a high-voltage and having a first semiconducting layer, a solid insulation, and a second semiconducting layer, said solid insulation positioned between said first semiconducting layer and said second semiconducting layer, said first semiconducting layer and said second semiconducting layer providing respective equipotential surfaces; and

inserting an elongated support member axially in said slot and in contact with said cable.

120. The method of Claim 119, wherein:

said inserting step, comprises

inserting hose-like element as said elongated support element in the slot, and

filling the hose-like element with a pressure medium.

121. The method of Claim 120, wherein:

said filling step comprises

filling the hose-like element with a curable material; and

hardening the curable material under pressure.

122. The method of Claim 120, wherein:

said filling step comprises filling said hose-like element with epoxy.

123. The method of Claim 120, wherein:

said inserting step comprises inserting said hose-like element after said cable has been inserted in said slot.

124. The method of Claim 120, wherein:

said inserting step comprises inserting said hose-like element in said slot, and in at least another slot in a to-and-fro pattern.

125. The method of Claim 119, further comprising:

surrounding the cable with a corrugated sheath before inserting the cable into the slot.

126. The method of Claim 125, wherein said surrounding step comprises applying a separate tubular corrugated sheet around the cable before inserting the cable into the slot.

127. The method of Claim 125, wherein:

said surrounding step comprises surrounding the corrugated sheath by applying a

separate tubular corrugated sheath in the slot before inserting the cable into the slot.

128. The method of Claim 126 wherein:

said surrounding step comprises applying a lubricant on the cable in an axial direction.

129. The method of Claim 125, further comprising the step of:

inserting a casting compound between the corrugated sheath and a wall of the slot.

130. The method of Claim 129, further comprising the step of:

casting axial cooling tubes in the casting compound.

131. The method of Claim 125, wherein:

said surrounding step comprises surrounding the cable with the corrugated sheath which includes annular corrugations.

132. The method of Claim 125, wherein:

said step of surrounding comprises surrounding the cable with the corrugated sheath having annular corrugations that run in a helical direction.

133. The method of Claim 125, wherein:

said surrounding step comprises surrounding the cable with the second semiconducting layer as an outer semiconducting layer having corrugations as said corrugated sheath surface.

134. The method of Claim 133, wherein:

said surrounding step, comprises surrounding the cable with the corrugations running in a longitudinal direction.

135. The method of Claim 133, further comprising the step of:

extruding the outer semiconducting layer of the cable.

136. The method of Claim 119, wherein:

said inserting step comprises inserting said support element in an axial direction after winding the cable.

137. The method of Claim 136, wherein:

said inserting step comprises inserting the support element into a space between a cable lead-through of said cable and a wall of said slot while having said support element maintain a state that enables said support element to pass through a profile of said slot without obstruction or resistance in an axial cross-section of said slot; and

expanding transversely said support element in an axial direction after said inserting step.

138. The method of Claim 137, wherein:

said inserting step, comprises inserting a thin walled elastic hose as said support element, and while said thin walled elastic hose is decompressed such that a thinness and elasticity of said thin walled elastic hose is sufficient so as to be deformed without noticeable resistance for allowing passage of the thin walled elastic hose through the space.

139. The method of Claim 137, wherein:

said inserting step comprises inserting the support element when surrounding an elongated body along an entire length of the thin walled elastic hose such that a cross-sectional dimension of said body and said hose, having a void space formed therebetween, and filling said void space with a hardening elastic material after said support element is inserted into the slot and expanding the hose traversely to the axial direction.

140. The method of Claim 139, wherein:

said filling step comprises filling the elongated body, which includes an inner, thin-walled hose, with a pressure medium before said void space is filled.

141. The method of Claim 140 further comprising:

removing the elongated body from the void space after the void space is filled and said pressure medium hardened, said elongated body being a rod element.

142. The method of Claim 141, wherein the rod element having a profile with longitudinal ridges thereon.

143. The method of Claim 137, wherein said support element having a cross-sectional profile a sufficient clearance for being inserted into said space, and allowing a passage into said space.

144. The method of Claim 119, wherein:

said inserting step includes subjecting the support element to an axial tensile force to reduce a cross-sectional profile of the support element and allow passage of said support element into said space; and

releasing the tensile force when the support element is in position so as to expand the cross-sectional profile of the support element.

145. The method of Claim 136 wherein:

said inserting step includes forcibly deforming the support element, said support element being a hose, and

releasing the hose from the deformed state after inserting the hose into the space.

146. The method of Claim 145, wherein:

said forcibly deforming step includes gluing the hose so as to assume a forcibly deformed state; and

releasing an adhesive joint made during said gluing step when the hose is in place.

147. The method of Claim 145, wherein:

said inserting step includes subjecting an interior of the hose to a negative pressure, and

releasing the negative pressure when the hose is in place.

148. The method of Claim 137, wherein:

said inserting step includes inserting the support element as a hose having a cross-sectional profile, said cross-sectional profile being less than a cross-sectional profile of said space; and

filling the hose with a pressure medium when the hose is in place.

149. The method of Claim 148, wherein:

said filling step comprises filling the hose with a cold-setting material as said pressure material.

150. The method of Claim 148, wherein:

said filling step comprises filling said hose with at least one of a gas and a liquid; and

sealing the hose at respective ends thereof after said hose is filled with the pressure medium.

151. The method of Claim 148, wherein:

said filling step comprises filling the hose with at least one of a gas and a liquid while maintaining communication between the pressure medium and a pressure source even while the rotating machine is in operation.

152. The method of Claim 148, wherein;

said filling step comprises expanding the hose with a rod-shaped body as said pressure medium so as to expand said hose.

153. A rotating electric machine comprising:

a stator having a slot;

a high-voltage winding disposed in said slot, having

means for conducting an electrical current in said high-voltage winding,

means for electrically insulating said means for conducting, said means for electrically insulating having,

means for creating a first equipotential surface around said means for conducting,

means for creating a second equipotential surface around said means for creating the first equipotential surface, and

means for separating said first equipotential surface from said second equipotential surface; and

means for supporting said winding in said slot.